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Fundamental Design Issues for the Future Internet

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Abstract: ***The need for the internet has increased multifold in the recent past. There are a lot of algorithms and techniques designed and develop for increasing the speed of the data over the internet. The routers which routes the packets to the destination also play an important role in the speedy and effective data transfer over the internet. The normal internet routers use the shortest path routing techniques for speeding over the internet. The shortest path algorithm is an effective algorithm always but a tedious situation arises when shortest path is already busy with the data and if there is heavy traffic in the shortest path. If we are sending our data through the same shortest path again the traffic will increase and again there is congestion and packet collision in the same path. Here we design a new technique which senses traffic in the network and sends the packets through the path which has the least traffic. This method prevents the path from getting further congested and reduces the packet collision.***

Keywords: Routers, network, packets

1. Introduction

The primary purpose of current internet routing protocols is to maintain connectivity. Both unicast and multicast routing protocols identify a single, shortest-path route from the source to a destination. This design evolved from earlier load- based ARPANET routing protocols [1], [2] as a means for providing stability in a rapidly-expanding and dynamic internetwork. This and other design choices were made in order to support applications with the relatively elastic service requirements [3], such as data transfer (email, ftp, web browsing) and remote login. Recently, there has been renewed interest in supporting a broader set of applications with the real-time service requirements, such as conferencing and media broadcasts. In addition to scheduling, admission control, and resource reservation, new routing mechanisms are needed to support these types of applications.

2. Assumptions about the Host Architecture

- **Service Monitoring:** First, applications need some mechanism for determining that the service they are currently receiving is inadequate. A simple example is a user of a real-time audio or video application (or the application itself) monitoring the loss rate and triggering an alternate path request if it exceeds a threshold for a period of time.
- **Link Identification:** Second, applications need to identify which links are causing the service degradation. Continuing the example above, the user or application may use mtrace or a similar tool to determine that a bottleneck link may be congested.
- **Application Interface:** Finally, the application must give the list of problem links to the path construction component and ask it to find an alternate path. The interface should allow for an asynchronous response indicating that installation is complete, indicating the application can restart its monitoring to determine whether the new path has improved its performance.

3. Path Computation

3.1 Node Plotting

When the RREQ messages proportional to mobile nodes it leads to network congested. Then the routing control packets may be dropped and the source node to initiate another route discovery process to increase the amount of control traffic in the network. From the route discovery process the nodes are plotted.

3.2 Traffic Analyzer

The source is sending the data to the destination in the primary route. Those sources occupies the route completely, while other source also use that route means then definitely traffic takes place. If the data losses transmission, analyzer sends the message to the source and trace the alternate routing.

3.3 Shortest Path Tracing

The shortest path tracing is the process of tracing the routes which are processed in the routing. In this tracing process it acquires the shortest route in routing according to response of source and destination.

3.4 Routing Table Formation

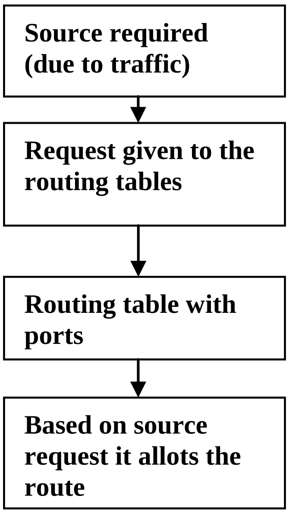

Fig 1: Routing table Formation

An alternate path for the transmission due to congestion is provided. The alternate path is formed in between source and destination based on traffic in the primary route.

4. Routing Architecture

The two Key features of our routing architecture that enable it to scale to large networks and large multicast groups are that: (1) Alternate path computation is distributed to group members (2) The computation relies primarily on information that is local to the group member. Distributing the path computation means that each group member only needs to find a route between itself and the rest of the tree, rather than requiring to find a route between itself and the rest of the tree, rather than requiring the source to find routes to each members to use existing unicast routing protocols as the basis for the path finding algorithm. This enables scaling that would not be possible if group members needed to know information about the entire network. Distributing the path computation also allows group members to incrementally refine their path finding algorithms. Group members do not need to globally agree on a metric or a particular algorithm

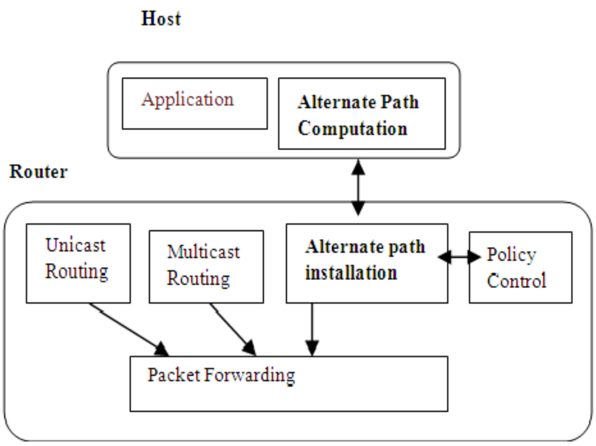

Fig 2: Routing architecture

4.1 Dynamic Path Allocation

The source sends the requested data to the destination mean while other destination nodes are occupied the primary route completely. The source uses the same route, the traffic and the congestion takes place. So the source required an alternate path for routine the file to the corresponding destination node. The source needs the routing table for the alternate path for routing in terms of multicasting. It gets another route for the particular destination node and sends the data successfully.

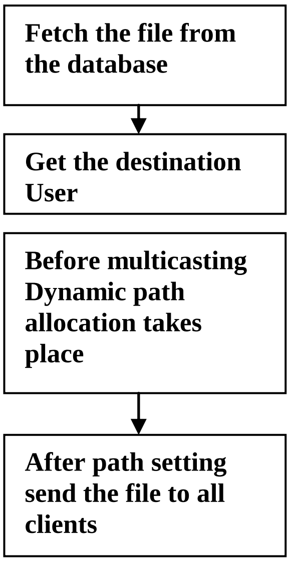

Fig 3: Path allocation

4.2 Simulation Model

Because its performance depends heavily on the topology, a flat random network is used. Flat networks are created so that edges mostly connect nodes "near" each other. In each simulation, we compare the performance of local search to a link-state algorithm with full knowledge of the topology. We do not eliminate cases where the link-state algorithm can't find a path. We start with results for the 100-node flat network, and then consider hierarchical networks.

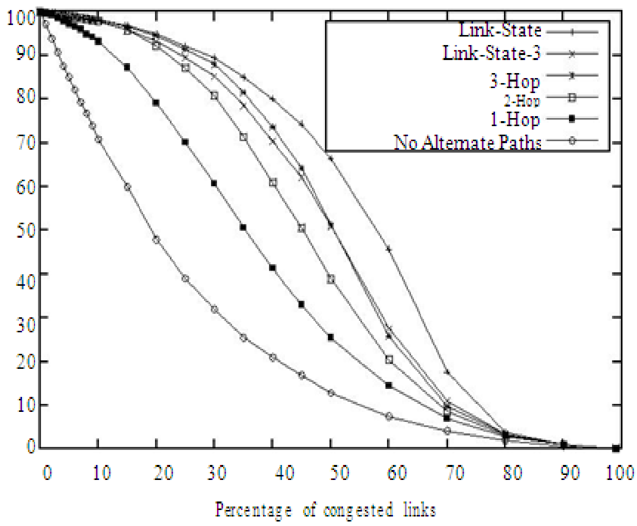

Fig 4: Graph showing alternate paths

5. Conclusions

This paper has described architecture and mechanisms for computing and installing alternate paths for multicast. Toward this end, path computation and installation to receivers are distributed. The receivers use a local search heuristic to explore a small portion of the network's topology and compute an alternate path. They then use an installation protocol that reconfigures a multicast tree with this new path. Simulations demonstrate that the local search heuristic can find alternate paths nearly as well as a full link state routing protocol, using only partial information about the network. This heuristic scales well to large networks because it inherently limits the amount of the network it will

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